

Application No.: 09/731,460

Atty Docket: HBES 1028-1

REMARKS

Pending in the application are claims 1-22. Independent claims 1 and 15 are currently amended. Claim 7 is also amended to correct a typographical error. All claims remain pending.

Claim Rejections – 35 USC § 102

The Examiner rejected claims 1, 3-6, 15, 17, 18 and 20-22 under 35 U.S.C. 102(b) as being anticipated by Kostrzewski et al. (SPIE). Applicant has amended claim 1, to provide:

an imager having an array of photocells, where each photocell produces an electrical response to light exposure, and the electrical responses of the array of photocells together represent spatial frequency-domain image data representing an object illuminated with an incoherent light source; and

an image processor that receives the spatial frequency-domain image data from the imager and transforms the spatial frequency-domain image data into spatial-domain image data, thereby reconstructing an image of the object.

Independent claim 15 also has been amended.

Kostrezwski does not meet the now claimed limitations. We respectfully submit that claims 1, 3-6, 15, 17, 18 and 20-22 are allowable over Kostrezwski.

Claim Rejections – 35 USC § 103(a)

The Examiner rejected claim 16 under 35 U.S.C. 103(a) as being unpatentable over Kostrzewski et al. (SPIE) as to claim 15 above, and further in view of Nagumo (US 4,189,751). Independent claim 15 has been amended, as mentioned above, to provide:

capturing a diffraction pattern of an image object illuminated by an incoherent source;

producing digital spatial frequency-domain image data corresponding to the captured diffraction pattern of the object; and

converting the spatial frequency-domain image data to a spatial domain, thereby reconstructing an image of the object.

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Kostrezwski does not meet the now claimed limitations of claim 15. Therefore, a combination premised on Kostrezwski meeting the limitations of claim 15 fails. Claim 16, which depends from the allowable claim 15, should also be allowable.

The Examiner **rejected claim 19** under 35 U.S.C. 103(a) as being unpatentable over Kostrezwski et al. (SPIE) in a single reference obviousness rejection. The processing result from Kostrezwski is depicted in Figures 1, and 12-15 as a correlation peak. So a display such as Kostrezwski's host computer monitor does not meet the now claimed limitations.

The Examiner **rejected claims 1-4, 7 and 8** under 35 U.S.C. 103(a) as being unpatentable over Artigas (US 5,181,102) in a single reference obviousness rejection. Applicants do not see enough discussion of overcoming pixel defects in Artigas to teach the claimed imaging system. The whole discussion of Fourier principles in Artigas is reproduced below.

In a modified embodiment illustrated in FIG. 2, the filtering is carried out after a Fourier transformation with respect to the spectrum of spatial frequencies. To do this, use is made, for example, of a lens 91 which provides the Fourier transform of the image, and the filtering is carried out by placing a diaphragm 92 exhibiting an aperture 93, for example in the form of a lozenge or a rectangle, the diagonals of which are vertical and horizontal. The size of the aperture 93 of the diaphragm 92 determines the spatial frequencies eliminated.

The possibility of optically obtaining the Fourier transform of an image is well known. It is employed, especially, in phase contrast microscopy.

The summary of invention and claim 9 show that Artigas' motivation to use a Fourier transform was to combine it with a diaphragm eliminating high diagonal spatial frequencies from the spectrum. This is a limited application that does not help the Examiner meet the limitations of the claims.

When the Examiner is further considering the single reference Section 103 rejection, some legal principles should be kept in mind. For a single reference Section 103 rejection, the Examiner needs to provide evidence of a teaching or suggestion to extend the reference to include the claimed features that admittedly are not part of the

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reference. It is fundamental, as indicated in MPEP Section 2143.01, that the Examiner rely on some evidentiary quality suggestion to modify Huang:

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The latest update to this section of the MPEP cites *In re Lee*, in which the Federal Circuit clarified the need for evidentiary quality support of an Examiner's factual basis for finding a teaching, suggestion or motivation in the prior art (as opposed to the Examiner's opinion), 277 F.3d at 1343-44:

As applied to the determination of patentability *vel non* when the issue is obviousness, "it is fundamental that rejections under 35 U.S.C. § 103 must be based on evidence comprehended by the language of that section." *In re Grasselli*, 713 F.2d 731, 739, 218 U.S.P.Q. (BNA) 769, 775 (Fed. Cir. 1983). ... "The factual inquiry whether to combine references must be thorough and searching." *Id.* It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. [citation omitted] The need for specificity pervades this authority. See, e.g., *In re Kotzab*, 217 F.3d 1365, 1371, 55 U.S.P.Q.2D (BNA) 1313, 1317 (Fed. Cir. 2000) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed"); *In re Rouffet*, 149 F.3d 1350, 1359, 47 U.S.P.Q.2D (BNA) 1453, 1459 (Fed. Cir. 1998) ("even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious."); *In re Fritch*, 972 F.2d 1260, 1265, 23 U.S.P.Q.2D (BNA) 1780, 1783 (Fed. Cir. 1992) (the examiner can satisfy the burden of showing obviousness of the combination "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references").

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... In its decision on Lee's patent application, the Board rejected the need for "any specific hint or suggestion in a particular reference" to support the combination of the Nortrup and Thunderchopper references. Omission of a relevant factor required by precedent is both legal error and arbitrary agency action.

The outcome of cases decided even before *In re Lee* makes it clear that real evidence is required to support an asserted teaching, suggestion or motivation to modify a single reference for obviousness. See, e.g., *In re Kotzab*, 217 F.3d 1365, 1369-70 (Fed. Cir. 2000) (rev'd finding of obviousness, as "Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference."); *Kolmes v. World Fibers Corp.*, 107 F.3d 1534, 1541 (Fed. Cir. 1997) (aff'd patent not invalid, as no suggestion to modify the '989 patent with regard to non-metallic fibers).

Applicant urges the Examiner to withdraw this Section 103 rejection of claims 1-4, 7 and 8, because the single reference cited admittedly does not include all of the claimed limitations and there is no evidentiary quality support for extending the single reference.

The Examiner rejected claims **claims 9-15 and 19** under 35 U.S.C. 103(a) as being unpatentable over Artigalas (US 5,181,102) in view of Fowler et al. (US 5,461,425). Claims 9 and 15 are the independent claims.

Regarding claim 9, the Examiner makes no mention of the structures corresponding to the claimed means and does not compare the references to those structures. Accordingly, the Examiner has not met the initial burden of making a prima facie showing of obviousness.

Much of the Examiner's argument regarding Artigalas relies on Artigalas to provide elements that cannot be found in the reference. In the context of claims 1-4, 7 and 8, we already have demonstrated that Artigalas does not provide a sufficient evidentiary basis to meet the standard of *In re Lee* for extending a reference beyond what it teaches.

Combining Artigalas' limited teachings (see excerpt reproduced above) with conjured elements that are not taught by Artigalas, with Fowler et al. is all hindsight. The claimed invention, taken as a whole, is not similar to the actual teachings of the

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references. We do not see how Fowler et al. supplies any element missing from Artigalas. It claims to provide an image sensor with a wide dynamic range and low power consumption (col. 7, lines 21-29), but that does not bridge the difference between the passage reproduced and the imaging system claimed. The Examiner must be using the claim as a blueprint for combining the references, which is not permissible, because it is not possible to find a suggestion in either of the two references to produce the claimed invention, taken as a whole.

Applicant respectfully submits that claims 9-14 are therefore allowable over the combination of Artigalas and Fowler et al.

Regarding claims 15 and 19, the same reasoning applies. Moreover, Artigalas' applications for Fourier techniques have nothing to do with these claims. One application that Artigalas teaches for a use of a Fourier lens is "phase contrast microscopy," which builds an image from complex amplitude information. See, e.g., Born and Wolf, *Principles of Optics*, p.472-476 (7th ed. 1999). Techniques to visualize features so small that complex amplitude information and phase differences must be used are not claimed. The other application that Artigalas teaches is using a diaphragm and aperture to eliminate certain spatial frequencies. Applicants see no reason to believe that such filtering would minimize point defects in an image or meet the elements of the claim.

Finally, the Examiner rejects claim 16 under 35 U.S.C. 103(a) as being unpatentable over Artigalas (US 5,181,102) in view of Fowler et al. (US 5,461,425) as applied to claim 15 above, and further in view of Nagumo (US 4,189,751). This argument depends on Artigalas and Fowler meeting the elements of claim 15, which they fail to meet, for the reasons given above. Moreover, there is no evidence, as required by *In re Lee*, of motivation to combine Artigalas, conjured elements not found in Artigalas, Fowler and Nagumo. Evidence is required, particularly suggestions in the references, that suggests combining the references in the manner claimed, taken as a whole. It is not enough to find one reference that mentions a Fourier lens, another that teaches a CCD readout and a third that removes noise; instead, there needs to be a suggestion or teaching to combine the references to produce the claimed invention,

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taken as a whole. Applicants cannot see how the invention as a whole could be replicated from the cited references, without using the claim as a blueprint and supplying missing elements as necessary.

CONCLUSION

Applicants respectfully submit that the pending claims are now in condition for allowance and thereby solicit acceptance of the claims, in light of these amendments.

If it would be helpful to advancing the case, a telephonic interview is invited. The undersigned can ordinarily be reached at his office at (650) 712-0340 from 8:30 to 5:30 PST, M-F and can be reached at his cell phone (415) 902-6112 most other times.

Respectfully submitted,


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